REMARKS

In response to the Office Action, Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the foregoing amendments and the following comments. Claims 15 and 32 have been amended by this paper, and Claims 1-14, 16-31, and 31-37 remain unchanged by this Amendment. Hence, by this paper, Claims 1-37 are presented for further examination.

I. Information Disclosure Statement

On page 2 of the Office Action, the Examiner noted that the information disclosure statement filed on February 14, 2002 fails to comply with the provisions of 37 C.F.R. §§ 1.97-98, and M.P.E.P. § 609 because the Gupta reference fails to include the date and pertinent pages.

A supplementary information disclosure statement has been filed herewith.

II. Discussion of Objections to the Specification

On page 2 of the Office Action, the Examiner objected to the specification because of informalities. The Examiner rejected to the use of "neighbourhood" rather than "neighborhood" on page 18, lines 13-15. On page 18, line 15, the Examiner objected to the phrase "As us used below."

The specification has been amended above based on the Examiner's comments and suggestions in the Office Action. Applicant submits that no new matter is thereby added.

III. Discussion of Objections to the Claims

On page 3 of the Office Action, the Examiner objected to Claims 15 and 32 because of informalities. Applicant has amended each of these claims in accordance the Examiner's comments and suggestions in the Office Action.

IV. Rejection of Claims 1-5, 11, 12, 16, 19-23, 30, and 35-37 Under 35 U.S.C. § 102(a)

On page 3 of the Office Action, the Examiner rejected Claims 1-5, 11, 12, 16, 19-23, 30, and 35-37 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,577,253 to Blickstein ("*Blickstein*"). The Examiner took the position that *Blickstein* discloses a method "of optimizing address expressions within source level code …wherein the address computation code or one of the address expressions has nonlinear operations [because at col. 4, lines 5-7 *Blickstein* discloses] 'this optimization finds inductive expressions (nonlinear operations), which

are expressions that can be computed as linear functions.' *Office Action* at page 4. For the reasons set forth below, Applicant respectfully disagrees with the Examiner's findings and determination that Claims 1-5, 11, 12, 16, 19-23, 30, and 35-37 are anticipated by *Blickstein*.

Claim 1 is generally directed to a method of address expression optimization of source-level code. In particular, Claim 1 recites, in relevant part, a method comprising "inputting a first source-level code that describes the functionality of the application, the first source-level code comprising address computation code and a plurality of arrays with address expressions, wherein the address computation code or one of the address expressions has <u>nonlinear</u> operations" (emphasis added).

Applicant respectfully submits that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *See* M.P.E.P. § 2131. Applicant submits that *Blickstein* does not expressly teach or suggest, at least, a method comprising "inputting a first source-level code that describes the functionality of the application, the first source-level code comprising address computation code and a plurality of arrays with address expressions, wherein the address computation code or one of the address expressions has nonlinear operations" as recited in Claim 1. Rather, *Blickstein* discloses a compiler framework having an optimization "which finds inductive expressions, which are expressions that can be computed as <u>linear</u> functions of induction variables." *Blickstein*, col. 4, lines 5-7 (emphasis added). As *Blickstein* explains, an "integer variable V is said to be an induction variable of Loop L if each store to V that occurs in L: 1. increments (or decrements) V by the same amount each time it is executed." *Blickstein*, col. 18. lines 59-62. "The expressions 'I*8,' 'I-4,' 'T' and 'T*4' are all inductive expressions in that they can be recomputed as linear functions of I." *Blickstein*, col. 19, lines 21-23. Thus, *Blickstein* merely discloses optimizations of <u>linear</u> functions of induction variables, e.g., a multiplication of an induction variable by a <u>constant</u>. Thus, in disclosing only optimization of <u>linear</u> functions, *Blickstein* fails to teach or suggest a method comprising "inputting a first source-level code ... wherein the address computation code or one of the address expressions has <u>nonlinear</u> operations" as recited by Claim 1. Furthermore, the Examiner has taken an inconsistent position because on page 23 of the Office Action, the Examiner notes that "Blickstein doesn't explicitly disclose that at least one address expression is nonlinear." Applicant therefore respectfully

submits that since *Blickstein* does not teach or suggest each and every element of Claim 1, this Claim is not anticipated and is in condition for allowance.

Since Claim 35 recites at least some of the patentable features discussed in connection with Claim 1 above, the Applicant submits that *Blickstein* also neither anticipates nor would have made obvious the invention recited in Claim 35 for at least the same reasons.

Applicant, therefore, respectfully submits that Claims 1 and 35 are allowable, and the Applicant therefore requests that the rejection of Claims 1 and 35 be withdrawn. Since each of Claims 2-5, 11, 12, 16, 19-23, 30, and 36-37 depends either directly or indirectly from one of Claims 1 or 35, the Applicant submits that those claims are also allowable.

V. Rejection of Claims 6, 7-10, 13-15, 17, 18, 24-29, and 31-34 Under 35 U.S.C. § 103(a)

On page 9 of the Office Action, the Examiner rejected each of Claims 6, 13-15, 17, and 18 under 35 U.S.C. 103(a) as being unpatentable over *Blickstein* in view of Janssen, et al., A Specification Invariant Technique for Regularity Improvement between Flow-Graph Clusters, 138-143 (I.E.E.E. 1996) ("*Janssen*"). On page 14 of the Office Action, the Examiner rejected each of Claims 7-9 under 35 U.S.C. 103(a) as being unpatentable over *Blickstein* in view of *Janssen* and in further view of Hong, et al., Throughput Optimization of General Non-Linear Computations, 406-499 (I.E.E.E. 1999) ("*Hong*"). On page 17 of the Office Action, the Examiner rejected Claim 10 under 35 U.S.C. 103(a) as being unpatentable over *Blickstein* in view of *Janssen* and in further view of *Miranda, et al.*, ADOPT: Efficient Hardware Address Generation in Distributed Memory Architectures, 20-25 (I.E.E.E. 1996) ("*Miranda*"). On page 18 of the Office Action, the Examiner rejected each of Claims 24-29 under 35 U.S.C. 103(a) as being unpatentable over *Blickstein* in view of U.S. Patent No. 5,692,169 to Kathail, et al ("*Kathail*"). Finally, on page 20 of the Office Action, the Examiner rejected each of Claims 31-34 under 35 U.S.C. 103(a) as being unpatentable over *Blickstein* in view of Balasa, et al., Transformation of Nested Loops with Modulo Indexing to Affine Recurrences, Parallelization Techniques for Uniform Algorithms, 1-12, (World Scientific Pub., 1994) ("*Balasa*). For the reasons set forth below, Applicant respectfully disagrees with the Examiner's findings and determination that Claims 6, 7-10, 13-15, 17, 18, 24-29, and 31-34 are rendered obvious by *Blickstein* in view of any of *Janssen, Hong, Miranda, Kathail,* or *Balasa.*

Each of Claims 6, 7-10, 13-15, 17, 18, 24-29, and 31-34 depend from one of independent Claims 1 and 35. Thus, Applicant respectfully submits that each of Claims 6, 7-10, 13-15, 17, 18, 24-29, and 31-34 recite patentable subject matter for, at least, the reasons discussed above with respect to Claims 1 and 35. Applicant therefore submits that Claims 6, 7-10, 13-15, 17, 18, 24-29, and 31-34 are each allowable.

VI. Conclusion

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. Accordingly, amendments to the claims for patentability purposes, the reasons therefore, and arguments in support of the patentability of the pending claim set are presented above. Any claim amendments which are not specifically discussed in the above remarks are not made for patentability purposes, and the claims would satisfy the statutory requirements for patentability without the entry of such amendments. In addition, such amendments do not narrow the scope of the claims. Rather, these amendments have only been made to increase claim readability, to improve grammar, and to reduce the time and effort required of those in the art to clearly understand the scope of the claim language. In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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